The Bond Portfolio Jigsaw Puzzle

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I often get asked to recommend an attractive bond for a retail investor, a question that never fails to non plus me, as this is simply not a well-defined question (it's not very well defined for equities either, but I'll let that go).

The question implies a bottom-up approach to bond portfolio management, an approach assuming that a portfolio comprised of good bonds will of necessity be a good portfolio. But bond management is a top-down process; an investor must start with his portfolio objectives and gradually fill the portfolio with individual bonds that each contribute to the overall ability of the portfolio to meet those objectives.

In other words, a fixed-income investor must at all times have a clear idea of the purpose of his portfolio and seek individual investments that will assist in meeting this goal. The implementation phase is difficult because:

- Corporations do not issue debt with the convenience of an individual investor in mind.
- Changes in market yields over time means that extant issues will have coupons that are significantly different from new issues, which may alter risk/reward characteristics of available issues.
- Even if an issue exists that has characteristics highly desired by the investor, it might simply not be available – for either institutional or retail accounts.

Thus, patience is key when building a portfolio, but patience must be balanced by preparedness. If an investor has a clear idea of his portfolio objectives, he will be able to decide quickly and accurately whether or not he is interested in a particular new issue or a secondary issue that has just become available. The simplest example of this is the infamous five-year ladder, which an investor might hold with the investment objective of holding a five-year ladder (there does not appear to be any more reasonable rationale, as I discuss in my essay "Preferred Shares and GICs", available online at http://www.himivest.com/media/PrefsAndGICs_090814A.pdf). If such an investor examines his portfolio statement and sees that he has cash to invest and GICs with remaining terms of 1, 2, 3 and 4 years...well, let's just say that that particular jigsaw is a fairly easy one!

When planning a fixed-income strategy, an investor should:

- Diversify, perhaps via an exchange-traded fund (ETF). For bond portfolios, an ETF is definitely the default option – they are cheap and well diversified (although not without their own problems, which I will discuss at another time). If the portfolio is of insufficient size for adequate diversification, then ETFs should definitely be used.
- Maintain good overall quality (single A credit rating average). Most investors have bond portfolios with quality far in excess of prudent levels and pay for this extreme credit risk aversion with very low yields. It is quite rare for an "A" rated bond to default and even when they do default there is the prospect of a good recovery. When one buys a Canada bond for credit quality reasons, an enormous liquidity premium is built into the price, as discussed in the July/August 2009 *CMS*.
- Maintain a high quality reserve which may be sold quickly, either to raise cash or adjust duration. Say your portfolio plan implies you should be buying a 9-year bond, but your broker isn't offering anything attractive with that term. Selling the Canadas you hold to buy nine-year Canadas will allow you to maintain your plan with minimal trading expenses while waiting patiently for a more permanent solution.
- Remember that dealers are not obliged to bid anything at all for bonds you later wish to sell, let alone make a good bid. Just because a company is doing well and paying its coupons according to plan does not mean you will be able to sell their bonds at a fair price! Investors should certainly hold a position in Canadas, provincials or ETFs to ensure that an unexpected need to liquidate a portion of the portfolio will not be a horrific experience.
- Pay attention to liabilities when investing assets. How much money will be coming out of the portfolio in the next 10 years? This is a prudent allocation to bonds. An extremely conservative allocation is 20 years' worth of withdrawals. Further, the term of the liabilities must be consid-

ered. A portfolio intended to provide income for the next twenty years will be very different from a portfolio with an expected life of ten years. Note that duration should be used to match assets and liabilities, not term to maturity.

The most common mistakes I see in fixed-income portfolios are an over-emphasis on credit quality and over-weighted, short-term holdings.

Consider the case of a healthy seventy-year-old couple with financial assets of $1 million and a pension of $30,000 annually. They would like to withdraw $40,000 annually (indexed for inflation) from the portfolio. After checking over their plans with a financial advisor specializing in personal finance, they decide to keep the next twelve years of income requirements in a fixed-income portfolio with the balance in equities to be rebalanced annually.

Issue	Price	Yield	Duration*	Holdings	Value
NS Power 5.75% 2013-10-1	109.51	3.18%	3.63	25,000 p.v.	27,400
Union Gas 7.90% 2014-2-24	119.37	3.12%	3.82	25,000 p.v.	30,079
Telus 5.95% 2015-4-15	110.15	3.88%	4.71	25,000 p.v.	28,249
Epcor Utilities 6.75% 2016-3-22	115.40	4.01%	5.42	25,000 p.v.	28,918
Bell Canada 5% 2017-2-15	103.29	4.47%	6.22	25,000 p.v.	26,002
Cameco 5.67% 2019-9-2	105.01	5.02%	7.73	25,000 p.v.	26,272
GTAA 5.96% 2019-11-20	112.83	4.37%	7.75	25,000 p.v.	28,773
Canada 1.25% 2011-12-1	100.17	1.17%	2.12	45,000 p.v.	45,272
CBO	20.75	2.36%	3.03	5,200 shares	107,900
SLF.PR.B	19.76	6.13% (div)	16.31	1,300 shares	25.688
CM.PR.I	19.81	5.95% (div)	16.81	1,300 shares	25,753
TD.PR.E	27.33	4.00% (div)	4.07	1,000 shares	27,330
GWO.PR.H	20.05	6.10% (div)	16.39	1,200 shares	24,060
TOTAL		3.66% (cash) 4.39% (int. eq.)	6.36		451,700

Bond duration was calculated using the MS-Excel "Duration()" function. The duration of CBO was obtained from Claymore's website. Durations for SLF.PR.B, CM.PR.I and GWO.PR.H are the inverse of their yield (see CMS, September 2008). Duration for TD.PR.E was calculated by my firm's software, assuming a call on the next exchange date.

To determine the overall fixed-income portfolio structure, they calculate the present value (PV) of the twelve required annual payments and the duration thereof, as explained in the *CMS* of May 2007. Assumptions of 2% inflation and a discounting yield of 3% result in PV=$450,761 and Maccaulay Duration of 6.38 years (it is more accurate to use Modified Duration, but Macaulay Duration is close enough).

Durations are calculated in order to immunize the portfolio. Immunization is a technique used to protect a portfolio from changes in interest rates and is easiest to understand when the intent is to withdraw a single cash flow from the account. Say, for instance, you agree to buy a house for $500,000 in five years and wish to set aside the funds today. You cannot simply buy a five-year bond, because there will be coupons paid in the interim that must be reinvested in order to achieve the originally calculated portfolio yield. Should interest rates drop, the reinvestment yield will be lower than expected and the portfolio will need to be topped up.

If the duration of the portfolio is too short, the portfolio value will be vulnerable to declines in interest rates, since interim reinvestment rates will be too low. If the duration is too long, on the other hand, the portfolio will be vulnerable to interest rate increases. If a ten-year bond is purchased to meet the five-year obligation, for instance, the investor will have to sell securities to raise the cash when needed and high interest rates at that time might mean a shortfall in the portfolio value.

Readers will note that duration is always less than term and this difference increases with term. Thus, these two figures will decline at differing rates as time passes so portfolio adjustments will need to be made periodically to keep the two figures in line. A bond portfolio, by its nature, changes it characteristics with time. There is no such thing as a "Rip Van Winkle" fixed-income portfolio!

With all these considerations in mind, we can construct a fixed-income portfolio to meet the purpose of our example. Issues have been selected from the online offerings of a major discount brokerage.

It will be noted that I have included a relatively large position in Claymore 1-5 Yr Laddered Corporate Bond ETF, trading as CBO on the Toronto Exchange. I dislike paying fund fees and expenses of 0.25% as much as anybody else, but the dealers' spreads on shorter term bonds in the quantities required for this portfolio are much higher than that – in the range of 50bp to 100bp (basis points), expressed in terms of yield. So, it represents the lesser of the two evils. The ETF is well diversified and may be sold in pieces when attractive bonds become available.

It will also be noted that in choosing individual securities I have shied away from the financial sector, as I wish to have a portion of the portfolio in preferred shares which are overwhelmingly financial (and the non-financials are very often expensive!).

But the most important message I have for fixed-income investors was that constructing the portfolio became much easier when the various specifications were known:

- The choice of bonds limited by what the dealer was offering online,
- Short-term corporate bonds held via an ETF,
- Maximum exposure of about 5% to a single directly held

corporate name (in practice, a 25,000 p.v. was used to take advantage of the dealer's pricing policy of a surcharge on prices for lesser amounts),

- 10% of the portfolio in short-term Canadas,
- 25% maximum of the portfolio in top-quality preferred shares,
- Because of the preferreds, avoid bonds from financial issuers,
- Minimum credit quality of A(low) in the directly held bond portfolio,
- Weighted average duration of about 6.4 years.

The characteristics of individual securities that were potential buys were used to create a spreadsheet. Once that was done, choosing specific issues and their weighting in the portfolio became a simple matter of trying different numbers until they added up correctly – just like a jigsaw!

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